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Humboldt Bay Power Plant
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March 28, 1997



PML-97-029

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555

Docket No. 50-133, OL-DPR-7
Humboldt Bay Power Plant Unit 3
Annual Facility Status and Survey Report for 1996

Dear Commissioners and Staff:

Enclosed is the Humboldt Bay Power Plant Unit 3 "Annual Facility Status and Survey Report" for 1996. This report is required by Section VII.H.1 of the Unit 3 Technical Specifications.

The report is comprised of two sections. Section A addresses the facility status and Section B presents the results of monitoring performed for the Radiological Environmental Monitoring Program. Section B has been reformatted to incorporate applicable reporting requirements of the NRC Radiological Assessment Branch's Branch Technical Position as well as maintaining the Unit 3 Technical Specification requirements related to radiological environmental monitoring.

As stated in the cover letter to last year's report, we are still assessing the need for tritium analysis of the weekly effluent canal sample. As noted in the enclosed report, we have continued to analyze the weekly effluent canal sample for tritium.

Sincerely,

A handwritten signature in cursive script, appearing to read 'Tom Moulia'.

TOM A. MOULIA

Enclosure

cc: Richard F. Dudley
E. W. Merschoff
Kenneth E. Perkins

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PML-97-029

ENCLOSURE

**HUMBOLDT BAY POWER PLANT UNIT 3
ANNUAL FACILITY STATUS AND SURVEY REPORT**

JANUARY 1 THROUGH DECEMBER 31, 1996

TABLE OF CONTENTS

A. FACILITY STATUS	1
1. Unit 3 Condition	1
2. Caisson Sump Sample Results	1
B. RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM	4
1. Summary Description of the Radiological Environmental Monitoring Program	4
a. Technical Specification Monitoring Requirements	4
2. EPA Interlaboratory Comparison Program	6
3. Monitoring Results	6
a. Radiological Environmental Monitoring Program Annual Summary	6
b. Airborne Pathway	6
c. Direct Radiation Pathway	6
d. Waterborne Pathway	7
(1) Surface Water	7
(2) Groundwater	7
e. Ingestion Pathway	7
f. Terrestrial Pathway	8

LIST OF TABLES

<u>Table</u>	<u>Page</u>
A-1 Caisson Sump Sample Results.....	2
B-1 HBPP Radiological Environmental Monitoring Program	9
B-2 Distances And Directions to Offsite Dosimetry Stations	10
B-3 TES Participation - EPA Interlaboratory Cross-Check Program Data	11
B-4 Radiological Environmental Monitoring Program Annual Report Summary	12
B-5 Onsite Environmental TLD Stations.....	14
B-6 Offsite Environmental TLD Stations.....	15
B-7 Discharge Canal Sample Results	16
B-8 Groundwater Monitoring Well Results.....	18

LIST OF FIGURES

<u>Figure</u>	<u>Page</u>
B-1 HBPP Onsite TLD Locations.....	20
B-2 HBPP Onsite Monitoring Well Locations	21
B-3 HBPP Offsite TLD Locations.....	22
B-4 Offsite Environmental Radiation Level Trends.....	24

**PACIFIC GAS AND ELECTRIC COMPANY
ANNUAL FACILITY STATUS AND SURVEY REPORT FOR
HUMBOLDT BAY POWER PLANT UNIT 3, COVERING THE PERIOD
JANUARY 1 THROUGH DECEMBER 31, 1996**

This annual report is required by Section VII.H.1 of the Humboldt Bay Power Plant (HBPP) Unit 3 Technical Specifications. The report describes the status of the facility, presents the results of facility measurements and the results of the Radiological Environmental Monitoring Program (REMP) for the period of January 1 through December 31, 1996.

A. FACILITY STATUS

1. Unit 3 Condition

The facility remained in SAFSTOR status during the report period.

2. Caisson Sump Sample Results

Section VI.B.1.c of the Technical Specifications requires that the caisson sump water be sampled and analyzed monthly (for total alpha, beta, and gamma activity), and that the average and maximum values for the results be reported annually. The data are reported in Table A-1.

TABLE A-1

CAISSON SUMP SAMPLE RESULTS

Date	Alpha Activity (pCi/l)	Beta Activity (pCi/l)	Gamma Activity (pCi/l)	
			Cs-137	Co-60
1/3/96	<MDA	<MDA	<MDA	<MDA
1/31/96	<MDA	<MDA	<MDA	<MDA
2/28/96	<MDA	<MDA	<MDA	<MDA
3/27/96	<MDA	<MDA	<MDA	<MDA
4/24/96	<MDA	<MDA	<MDA	<MDA
5/22/96	<MDA	<MDA	<MDA	<MDA
6/19/96	<MDA	<MDA	<MDA	<MDA
7/17/96	<MDA	<MDA	<MDA	<MDA
8/14/96	<MDA	<MDA	<MDA	<MDA
9/11/96	<MDA	<MDA	10.3 ± 6.5	<MDA
10/9/96	<MDA	<MDA	<MDA	<MDA
11/6/96	<MDA	<MDA	<MDA	<MDA
12/4/96	<MDA	<MDA	<MDA	<MDA

Calculated	Alpha Activity (pCi/l)	Beta Activity (pCi/l)	Gamma Activity (pCi/l)	
Parameters	(pCi/l)	(pCi/l)	Cs-137	Co-60
Average	Note 4	Note 4	10.3 ± 6.5	Note 4
Maximum	Note 4	Note 4	10.3 ± 6.5	Note 4

Notes:

1. Gamma activity measurements are performed on the original sample, with results corrected to the time of sampling. Naturally occurring isotopes are not reported. The typical gamma activity lower limit of detection (LLD) is approximately 10 pCi/l for both Cs-137 and Co-60. The typical Minimum Detectable Activity (MDA) is also approximately 10 pCi/l for both Cs-137 and Co-60. Results that were at or below the MDA are reported as "<MDA".
2. For purposes of this report, LLD is defined as the a priori (before the fact) lower limit of detection that represents the capability of the measurement system. MDA is defined as the a posteriori (after the fact) limit of detection capability considering a given instrument, procedure and type of sample.
3. Alpha and beta analyses are performed on a measured aliquot of sample. The typical LLDs for the analyses with 1 ml aliquots are approximately 1,000 pCi/l for alpha and 10,000 pCi/l

for beta. The MDA for the analyses varied from 510 to 1,480 pCi/l for alpha and from 4,200 to 10,700 pCi/l for beta. Results that are at or below these values are reported as "<MDA".

4. Results identified as "<MDA" are not included in the calculation of average and maximum values.

B. RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

1. Summary Description of the Radiological Environmental Monitoring Program

The NRC Radiological Assessment Branch issued a Branch Technical Position (BTP) on environmental monitoring in March 1978. Revision 1 of the BTP was issued as Generic Letter 79-65 and sets forth an example of an acceptable minimum radiological monitoring program. The specified environmental monitoring program provides measurements of radiation and of radioactive materials in those exposure pathways and for those radionuclides that lead to the highest potential radiation exposures of individuals resulting from plant effluents.

Many of the exposure pathway sample requirements specified in the BTP are not required for the HBPP Radiological Environmental Monitoring Program (REMP) because of the baseline conditions established in the SAFSTOR Decommissioning Plan and the Environmental Report as discussed below. In addition, the nuclides specified for analysis by the BTP have been modified to reflect the available source term at a nuclear power plant that has been shut down since July 2, 1976.

The Environmental Report, submitted to the NRC as Attachment 6 to the SAFSTOR license amendment request, established baseline conditions for soil, biota and sediments. In accordance with the NRC approved SAFSTOR Decommissioning Plan, these baseline conditions will only need to be reestablished prior to final decommissioning if a significant release occurs during SAFSTOR as the result of an accident.

The Environmental Report also contains a description of the demography and human activities within the environs surrounding the site.

The REMP consists of the collection and analysis of onsite and offsite environmental samples. Sample collection is performed by HBPP personnel and sample analysis is performed by PG&E's Technical and Ecological Services (TES). Analysis of TLDs used for monitoring direct radiation is performed by the Diablo Canyon Power Plant (DCPP) Dosimetry Group. A summary of the REMP is provided as Table B-1, HBPP Radiological Environmental Monitoring Program.

Sample collection for the REMP is performed at the sampling stations defined by Table B-2, Figure B-1, Figure B-2 and Figure B-3.

a. Technical Specification Monitoring Requirements

(1) Offsite Environmental Monitoring Stations

The Technical Specifications (Section V.A.4) require four offsite environmental monitoring stations (Stations 1, 2, 14 and 25) to be maintained through the

SAFSTOR period. These stations are required to be equipped with dosimetry devices that can be compared with those used onsite.

The Technical Specifications (Section V.B.4) require that if TLDs are the dosimetry devices used, they shall be monitored at least quarterly, with average and maximum values reported annually.

Section V.B.4 also requires that if the results from any station indicate that the total radiation dose would be 25 millirem per year or more above background, an investigation shall be conducted and necessary mitigative actions taken.

(2) Onsite Environmental Monitoring Stations

The Technical Specifications (Section V.A.6) establish requirements for onsite environmental monitoring stations.

- (a) A continuous sampler shall be provided for monitoring water in the discharge canal.

Section V.B.6.a requires that the continuous sampler shall normally be operating and that if the sampler is not operable, dip samples shall be taken.

Section V.B.6.a requires that the composite samples shall be analyzed weekly when the sampler has been operating.

Section V.B.6.a also requires that average and maximum activity and concentrations shall be reported annually. Dip samples shall not be used in determination of average and maximum concentrations.

- (b) A total of 16 onsite dosimeters are required to be located within the site perimeter fence line at locations specified on Technical Specification Figure V-2.

Section V.B.6.b requires that the onsite dosimeter stations be monitored at least quarterly and that average and maximum dosimetry values shall be reported annually.

- (c) The onsite groundwater monitoring program consists of five wells constructed in the vicinity of Unit 3.

Section V.B.6.c requires that the wells shall be sampled quarterly for total gross alpha, total gross beta, total gamma activity, and tritium and that average and maximum sample results shall be prepared annually.

2. EPA Interlaboratory Comparison Program

PG&E's Technical and Ecological Services participates in the EPA's Environmental Laboratory Performance Evaluation Study (Interlaboratory Cross-Check Program). This participation includes sufficient determinations to ensure independent checks on the precision and accuracy of the measurements of radioactive materials in the REMP samples. Results of the 1996 participation in the Interlaboratory Cross-Check Program are presented in Table B-3.

3. Monitoring Results

a. Radiological Environmental Monitoring Program Annual Summary

Results of the REMP sampling and analysis are summarized in Table B-4 in the format specified by the BTP.

b. Airborne Pathway

Airborne pathway monitoring is not required by the Technical Specifications. The Environmental Report, submitted to the NRC as Attachment 6 to the SAFSTOR license amendment request, established baseline conditions for the airborne pathway.

In accordance with the NRC approved SAFSTOR Decommissioning Plan, these baseline conditions will only need to be reestablished prior to final decommissioning if a significant release occurs during SAFSTOR as the result of an accident.

c. Direct Radiation Pathway

(1) Onsite Locations

Onsite monitoring of the direct radiation pathway is performed at 16 locations near the facility fenceline. Monitoring is performed using TLDs that are changed out quarterly. Detailed results of the onsite monitoring are provided in Table B-5. Variations in quarterly dose measurements at the onsite locations are attributed to in-plant sources and low-level waste packaging and shipping activities. All measurements were comparable to the ranges observed at these locations since entering SAFSTOR decommissioning.

All sampling and analysis for the onsite locations of the direct radiation pathway required during this reporting period were performed successfully.

(2) Offsite Locations

Offsite monitoring of the direct radiation pathway is performed at 4 locations in the vicinity of the facility. Monitoring is performed using TLDs that are changed out quarterly. Detailed results of the offsite monitoring are provided in

Table B-6. All measurements were comparable to the ranges observed at these locations since entering SAFSTOR decommissioning. Station No. 2, which served as a background monitoring location during plant operation, continued to show slightly higher readings than the 3 stations located within 1.3 miles of the facility. Therefore, it is concluded that all four locations are reporting naturally occurring background radioactivity. A plot of the radiation level trends for the four locations is shown in Figure B-4, Offsite Environmental Radiation Level Trends.

All sampling and analysis for the offsite locations of the direct radiation pathway required during this reporting period were performed successfully.

d. Waterborne Pathway

(1) Surface Water

Surface water sampling of the waterborne pathway is performed by sampling the discharge canal effluent. Sampling is normally performed by collecting a weekly sample from a discharge canal continuous composite sampler. If the composite sampler is found to be inoperable, dip samples from the discharge canal are taken in accordance with Technical Specification V.B.6.a. Dip sample analysis results are not used in determination of average and maximum concentrations. Detailed results of the discharge canal monitoring are provided in Table B-7.

During the reporting period, 52 discharge canal samples were obtained. No dip samples were required to be taken due to an inoperable composite sampler. Two samples obtained on August 30 and October 18 were collected as required but lost in shipment from HBPP to TES for analysis.

(2) Groundwater

Groundwater sampling of the waterborne pathway is performed by sampling five monitoring wells located to monitor for leakage from the spent fuel pool. Sampling of these monitoring wells is performed quarterly. Detailed results of groundwater monitoring are provided in Table B-8.

All sampling and analysis for the five monitoring wells of the waterborne pathway required during this reporting period were performed successfully.

e. Ingestion Pathway

Ingestion pathway monitoring is not required by the Technical Specifications. The Environmental Report established baseline conditions for the ingestion pathway. In accordance with the NRC approved SAFSTOR Decommissioning Plan, these

baseline conditions will only need to be reestablished prior to final decommissioning if a significant release occurs during SAFSTOR as the result of an accident.

f. Terrestrial Pathway

Terrestrial pathway monitoring is not required by the Technical Specifications. The Environmental Report established baseline conditions for the terrestrial pathway. In accordance with the NRC approved SAFSTOR Decommissioning Plan, these baseline conditions will only need to be reestablished prior to final decommissioning if a significant release occurs during SAFSTOR as the result of an accident.

TABLE B-1

HBPP RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

Exposure Pathway and/or Sample	Number of Samples and Locations	Sampling and Collection Frequency	Type of Analysis
DIRECT RADIATION	16 onsite stations with TLD Packets	TLD packets exchanged quarterly	Gamma exposure
	4 offsite stations with TLD Packets	TLD packets exchanged quarterly	Gamma exposure
WATERBORNE Surface Water	Discharge canal effluent	Continuous sampler operation with sample collection weekly Dip samples if sampler inoperable	Gamma isotopic ^(a) and tritium analysis of weekly sample
Groundwater	5 groundwater monitoring wells	Quarterly	Alpha, beta, tritium and gamma isotopic ^(a) analysis

^(a) Gamma isotopic analysis means the identification and quantification of gamma emitting radionuclides that may be attributable to the effluents from the facility.

TABLE B-2

DISTANCES AND DIRECTIONS TO OFFSITE DOSIMETRY STATIONS

Station No.	Station Name	Radial Direction		Radial Distance from Plant (Miles)
		Sector	By Degrees	
1	King Salmon Picnic Area	W	270	0.3
2	1742 Wood, Fortuna	SSE	158	11.2
14	South Bay School Parking Lot	S	180	0.4
25	Irving Drive, Humboldt Hill	SSE	175	1.3

TABLE B-3

**TES PARTICIPATION
EPA INTERLABORATORY CROSS-CHECK PROGRAM DATA**

Sample Type	Radionuclide	Month	EPA STANDARD pCi/l	TES RESULTS pCi/l	Participant Average* pCi/l
Water	H-3	August	10879.00	10966.67	10590.90
	Sr-89	January	73.00	69.67	70.58
		July	25.00	29.33	23.00
	Sr-90	January	5.00	4.57	5.20
		July	12.00	11.33	11.79
	I-131	October	27.00	27.67	27.61
	Co-60	June	99.00	96.33	98.12
		November	44.00	41.00	44.53
	Zn-65	June	300.00	311.07	309.37
		November	35.00	35.33	36.08
	Ba-133	June	745.00	742.67	720.13
		November	64.00	58.67	61.39
	Cs-134	June	79.00	77.00	72.92
		November	11.00	12.33	10.62
Blind Sample A & B	Cs-137	June	197.00	207.67	200.79
		November	19.00	19.67	20.36
	Gross alpha	July	24.40	18.80	19.67
	Gross beta	July	44.80	44.60	44.38
	Gross alpha	April	74.80	45.00	68.69
		October	59.10	81.73	59.91
	Gross beta	April	166.90	148.63	158.64
		October	111.80	80.10	107.72
	Sr-89	April	43.00	44.00	41.09
		October	10.00	13.60	10.36
	Sr-90	April	16.00	15.67	15.39
		October	25.00	23.73	23.68
	Co-60	April	31.00	30.67	31.60
		October	15.00	15.00	15.24
	Cs-134	April	46.00	43.67	43.10
		October	20.00	21.00	18.45
	Cs-137	April	50.00	54.00	51.17
		October	30.00	30.33	30.50

*Grand average results of all program participants.

TABLE B-4

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL REPORT SUMMARY

Name of Facility Humboldt Bay Power Plant Unit 3 Docket No. 50-133, OL-DPR-7
 Location of Facility Humboldt County, California Reporting Period January 1 - December 31, 1996
 (County, State)

Medium or Pathway Sampled (Unit of Measurement)	Type and Total Number of Analyses Performed	Lower Limit of Detection ^(a) (LLD)	All Indicator Locations Mean, (f) ^(b) , Range	Location with Highest Annual Mean		Control Locations Mean(f) ^(b) Range	Number of Nonroutine Reported Measurements
				Name, Distance and Direction	Mean (f) ^(b) Range		
AIRBORNE	Not Required	N/A	N/A	N/A	N/A	N/A	N/A
DIRECT RADIATION							
Onsite	TLD Packet (64)	N/A	13.1 ± 0.2 mR (64/64) 11.9 - 16.2 mR	Station T15 Onsite	14.2 ± 0.4 mR (4/4) 13.3 - 15.9 mR	12.4 ± 0.4 mR (4/4) 11.6 - 13.0 mR	0
Offsite	TLD Packet (16)	N/A	12.0 ± 0.1 mR (16/16) 11.1 - 14.2 mR	Station 2 11.2 miles 158°	13.1 ± 0.4 mR (4/4) 11.1 - 12.2 mR	Not Required	0
WATERBORNE							
Surface Water	Gamma isotopic (51)	Co-60 - 15 pCi/l Cs-137 - 18 pCi/l	<MDA	N/A	N/A	Not Required	0
	Tritium (51)	500 pCi/l	<MDA	N/A	N/A	Not Required	0
Groundwater	Gross alpha (20)	3 pCi/l	<MDA	N/A	N/A	N/A	0
	Gross beta (20)	4 pCi/l	10.8 ± 6 pCi/l (8/20) 4 - 37 pCi/l	Monitoring Well No. 11 Onsite	29 ± 21 pCi/l (2/4) 20 - 37 pCi/l	29 ± 21 pCi/l (2/4) 20 - 37 pCi/l	0

Medium or Pathway Sampled (Unit of Measurement)	Type and Total Number of Analyses Performed	Lower Limit of Detection ^(a) (LLD)	All Indicator Locations Mean, (f) ^(b) , Range	Location with Highest Annual Mean		Control Locations Mean(f) ^(b) Range	Number of Nonroutine Reported Measurements
				Name, Distance and Direction	Mean (f) ^(b) Range		
	Gamma isotopic (20)	Co-60 - 15 pCi/l Cs-137 - 18 pCi/l	<MDA	N/A	N/A	N/A	0
	Tritium (20)	500 pCi/l	778 ± 120 pCi/l (4/4) 533 - 984 pCi/l	Monitoring Well No. 11 Onsite	778 ± 120 pCi/l (4/4) 533 - 984 pCi/l	N/A	0
Drinking Water	Not Required	N/A	N/A	N/A	N/A	Not Required	N/A
Sediment	Not Required	N/A	N/A	N/A	N/A	Not Required	N/A
Algae	Not Required	N/A	N/A	N/A	N/A	Not Required	N/A
INGESTION							
Milk	Not Required	N/A	N/A	N/A	N/A	Not Required	N/A
Fish and invertebrates	Not Required	N/A	N/A	N/A	N/A	Not Required	N/A
TERRESTRIAL							
Soil	Not Required	N/A	N/A	N/A	N/A	Not Required	N/A

^(a) The LLD is defined as the smallest concentration of radioactive material in a sample that will yield a net count, above system background, that will be detected with 95 percent probability with only 5 percent probability of falsely concluding that a blank observation represents a "real" signal.

LLD is defined as the a priori lower limit of detection (as pCi per unit mass or volume) representing the capability of a measurement system and not the a posteriori (after the fact) limit for a particular measurement. (Current literature defines the LLD as the detection capability for the instrumentation only, and the MDC, minimum detectable concentration, as the detection capability for a given instrument, procedure and type of sample.)

^(b) The mean and the range are based on detectable measurements only. The fraction of detectable measurements at specified locations is indicated in parentheses (f); e.g., (10/12) means that 10 out of 12 samples contained detectable activity.

Not Required - not required by the HBPP Unit 3 Technical Specifications. Baseline environmental conditions for this parameter were established in the Environmental Report as referenced by the SAFSTOR Decommissioning Plan.

N/A - Not applicable

TABLE B-5

ONSITE ENVIRONMENTAL TLD STATIONS

Station Number	TLD Exposure Measurements (mR)			
	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
T1	14.4 ± 0.6	13.8 ± 0.7	14.4 ± 0.6	13.4 ± 0.4
T2	12.4 ± 0.3	12.9 ± 0.4	13.5 ± 0.5	12.5 ± 0.5
T3	12.1 ± 0.4	12.1 ± 0.6	12.8 ± 0.5	12.0 ± 0.5
T4	12.1 ± 0.4	12.5 ± 0.6	13.1 ± 0.6	12.3 ± 0.5
T5	13.0 ± 0.3	12.5 ± 0.4	13.3 ± 0.7	13.0 ± 0.5
T6	13.7 ± 0.3	12.7 ± 0.7	12.8 ± 0.5	14.2 ± 0.4
T7	15.6 ± 2.3	12.2 ± 0.5	13.0 ± 0.6	16.0 ± 0.4
T8	12.2 ± 0.5	12.5 ± 0.6	12.8 ± 0.4	13.4 ± 0.6
T9	12.8 ± 0.4	12.8 ± 0.6	13.4 ± 0.6	13.0 ± 0.3
T10	11.9 ± 0.9	12.4 ± 0.6	12.3 ± 0.5	11.9 ± 0.3
T11	12.1 ± 0.2	13.0 ± 0.4	13.4 ± 0.4	13.2 ± 0.3
T12	14.3 ± 0.7	14.1 ± 0.6	13.8 ± 0.5	13.3 ± 0.5
T13	15.9 ± 0.8	13.4 ± 0.3	14.0 ± 0.5	13.5 ± 0.4
T14	14.6 ± 0.4	14.1 ± 0.5	13.6 ± 0.4	13.7 ± 0.3
T15	15.9 ± 0.4	13.8 ± 0.4	13.9 ± 0.2	13.3 ± 0.4
T16	16.2 ± 1.3	13.8 ± 0.5	13.2 ± 0.6	12.8 ± 0.5
T17	11.6 ± 0.4	12.4 ± 0.5	13.0 ± 0.3	12.4 ± 0.4

Parameter	Calculated Parameters (mR)			
	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
Average	13.7 ± 0.7	13.0 ± 0.3	13.3 ± 0.3	13.2 ± 0.2
Maximum	16.2 ± 1.3	14.1 ± 0.6	14.4 ± 0.6	16.0 ± 0.4

Notes:

1. These exposures are reported for a standardized period of 90 days.
2. Station T17 is an offsite control station. Its results are not included in the calculated parameters.

TABLE B-6

OFFSITE ENVIRONMENTAL TLD STATIONS

Station Number	TLD Exposure Measurements (mR)			
	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
1	11.8 ± 0.4	12.0 ± 0.3	13.1 ± 0.5	11.2 ± 0.3
2	12.5 ± 0.4	13.2 ± 0.4	14.2 ± 0.5	12.5 ± 0.5
14	11.4 ± 1.1	11.1 ± 0.4	12.2 ± 0.3	11.2 ± 0.5
25	11.2 ± 0.3	11.5 ± 0.5	11.8 ± 0.3	11.2 ± 0.5

Parameter	Calculated Parameters (mR)			
	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
Average	11.7 ± 0.3	12.0 ± 0.2	12.8 ± 0.2	11.5 ± 0.2
Maximum	12.5 ± 0.4	13.2 ± 0.4	14.2 ± 0.5	12.5 ± 0.5

Note:

1. These exposures are reported for a standardized period of 90 days.

TABLE B-7

DISCHARGE CANAL SAMPLE RESULTS

Sample Date	Gamma Activity (pCi/l)	Tritium Activity (pCi/l)
1/4/96	<MDA	<MDA
1/11/96	<MDA	<MDA
1/18/96	<MDA	<MDA
1/25/96	<MDA	<MDA
2/1/96	<MDA	<MDA
2/8/96	<MDA	<MDA
2/15/96	<MDA	<MDA
2/22/96	<MDA	<MDA
2/29/96	<MDA	<MDA
3/7/96	<MDA	<MDA
3/14/96	<MDA	<MDA
3/21/96	<MDA	<MDA
3/28/96	<MDA	<MDA
4/4/96	<MDA	<MDA
4/11/96	<MDA	<MDA
4/18/96	<MDA	<MDA
4/25/96	<MDA	<MDA
5/2/96	<MDA	<MDA
5/9/96	<MDA	<MDA
5/16/96	<MDA	<MDA
5/22/96	<MDA	<MDA
5/30/96	<MDA	<MDA
6/6/96	<MDA	<MDA
6/13/96	<MDA	<MDA
6/20/96	<MDA	<MDA
6/27/96	<MDA	<MDA
7/4/96	<MDA	<MDA
7/11/96	<MDA	<MDA
7/19/96	<MDA	<MDA
7/26/96	<MDA	<MDA
8/2/96	<MDA	<MDA
8/9/96	<MDA	<MDA
8/16/96	<MDA	<MDA
8/23/96	<MDA	<MDA
8/30/96	Note 4	Note 4
9/6/96	<MDA	<MDA
9/13/96	<MDA	<MDA

TABLE B-7 (CONTINUED)
DISCHARGE CANAL SAMPLE RESULTS

Sample Date	Gamma Activity (pCi/l)	Tritium Activity (pCi/l)
9/20/96	<MDA	<MDA
9/27/96	<MDA	<MDA
10/4/96	<MDA	<MDA
10/11/96	<MDA	<MDA
10/18/96	<MDA	Note 4
10/25/96	<MDA	<MDA
11/1/96	<MDA	<MDA
11/8/96	<MDA	<MDA
11/15/96	<MDA	<MDA
11/22/96	<MDA	<MDA
11/29/96	<MDA	<MDA
12/6/96	<MDA	<MDA
12/13/96	<MDA	<MDA
12/20/96	<MDA	<MDA
12/27/96	<MDA	<MDA

Calculated Parameters	Gamma Activity (pCi/l)	Tritium Activity (pCi/l)
Average	Note 5	Note 5
Maximum	Note 5	Note 5

Notes:

1. Gamma measurements are performed on the original sample, with results corrected to the time of sampling. Naturally occurring isotopes are not reported. The maximum lower limits of detection (LLDs) for Co-60 and Cs-137 are 15 and 18 pCi/l, respectively.
2. For purposes of this report, LLD is defined as the a priori (before the fact) lower limit of detection that represents the capability of the measurement system. MDA is defined as the a posteriori (after the fact) limit of detection capability considering a given instrument, procedure and type of sample.
3. Tritium analysis is performed on a measured aliquot of distilled sample. The reported values are net measurements above instrument background. Results that are at or below the typical MDA of 500 pCi/l are reported as "<MDA".
4. Sample lost in shipment.
5. Results identified as "<MDA" are not included in the calculation of average and maximum values.

TABLE B-8

GROUNDWATER MONITORING WELL RESULTS

Monitor Well Number	Sample Date	Alpha Activity (pCi/l)	Beta Activity (pCi/l)	Gamma Activity (pCi/l)	Tritium Activity (pCi/l)
MW-1	02/20/96	<MDA	<MDA	<MDA	<MDA
MW-2	02/20/96	<MDA	<MDA	<MDA	<MDA
MW-4	02/20/96	<MDA	<MDA	<MDA	<MDA
MW-6	02/20/96	<MDA	<MDA	<MDA	<MDA
MW-11	02/20/96	<MDA	<MDA	<MDA	984 ± 252
MW-1	05/21/96	<MDA	6 ± 3	<MDA	<MDA
MW-2	05/21/96	<MDA	4 ± 3	<MDA	<MDA
MW-4	05/21/96	<MDA	<MDA	<MDA	<MDA
MW-6	05/21/96	<MDA	4 ± 3	<MDA	<MDA
MW-11	05/21/96	<MDA	<MDA	<MDA	753 ± 212
MW-1	08/20/96	<MDA	<MDA	<MDA	<MDA
MW-2	08/20/96	<MDA	<MDA	<MDA	<MDA
MW-4	08/20/96	<MDA	<MDA	<MDA	<MDA
MW-6	08/20/96	<MDA	<MDA	<MDA	<MDA
MW-11	08/20/96	<MDA	20 ± 8	<MDA	843 ± 243
MW-1	11/20/96	<MDA	6 ± 24	<MDA	<MDA
MW-2	11/20/96	<MDA	4 ± 13	<MDA	<MDA
MW-4	11/20/96	<MDA	<MDA	<MDA	<MDA
MW-6	11/20/96	<MDA	5 ± 9	<MDA	<MDA
MW-11	11/20/96	<MDA	37 ± 41	<MDA	533 ± 249

TABLE B-8 (CONTINUED)

GROUNDWATER MONITORING WELL RESULTS

Calculated Parameters (By Monitor Well Number)	Alpha Activity (pCi/l)	Beta Activity (pCi/l)	Gamma Activity (pCi/l)	Tritium Activity (pCi/l)
Average: MW-1	Note 4	6 ± 12	Note 4	Note 4
Average: MW-2	Note 4	4 ± 7	Note 4	Note 4
Average: MW-4	Note 4	Note 4	Note 4	Note 4
Average: MW-6	Note 4	4 ± 5	Note 4	Note 4
Average: MW-11	Note 4	29 ± 21	Note 4	778 ± 120
Maximum: MW-1	Note 4	6 ± 24	Note 4	Note 4
Maximum: MW-2	Note 4	4 ± 13	Note 4	Note 4
Maximum: MW-4	Note 4	Note 4	Note 4	Note 4
Maximum: MW-6	Note 4	5 ± 9	Note 4	Note 4
Maximum: MW-11	Note 4	37 ± 41	Note 4	984 ± 252

Notes:

1. Reported values are net measurements (above instrument background). The typical minimum detectable activities for the analyses for gross alpha, gross beta, and tritium are 3, 4, and 500 pCi/l, respectively.
2. Gamma activity measurements are performed on the original sample, with results corrected to the time of sampling. Naturally occurring isotopes are not reported. The maximum lower limits of detection (LLDs) for Co-60 and Cs-137 are 15 and 18 pCi/l, respectively.
3. For purposes of this report, LLD is defined as the a priori (before the fact) lower limit of detection that represents the capability of the measurement system. MDA is defined as the a posteriori (after the fact) limit of detection capability considering a given instrument, procedure and type of sample.
4. Results identified as "<MDA" are not included in the calculation of average and maximum values.

FIGURE B-1

HBPP ONSITE TLD LOCATIONS

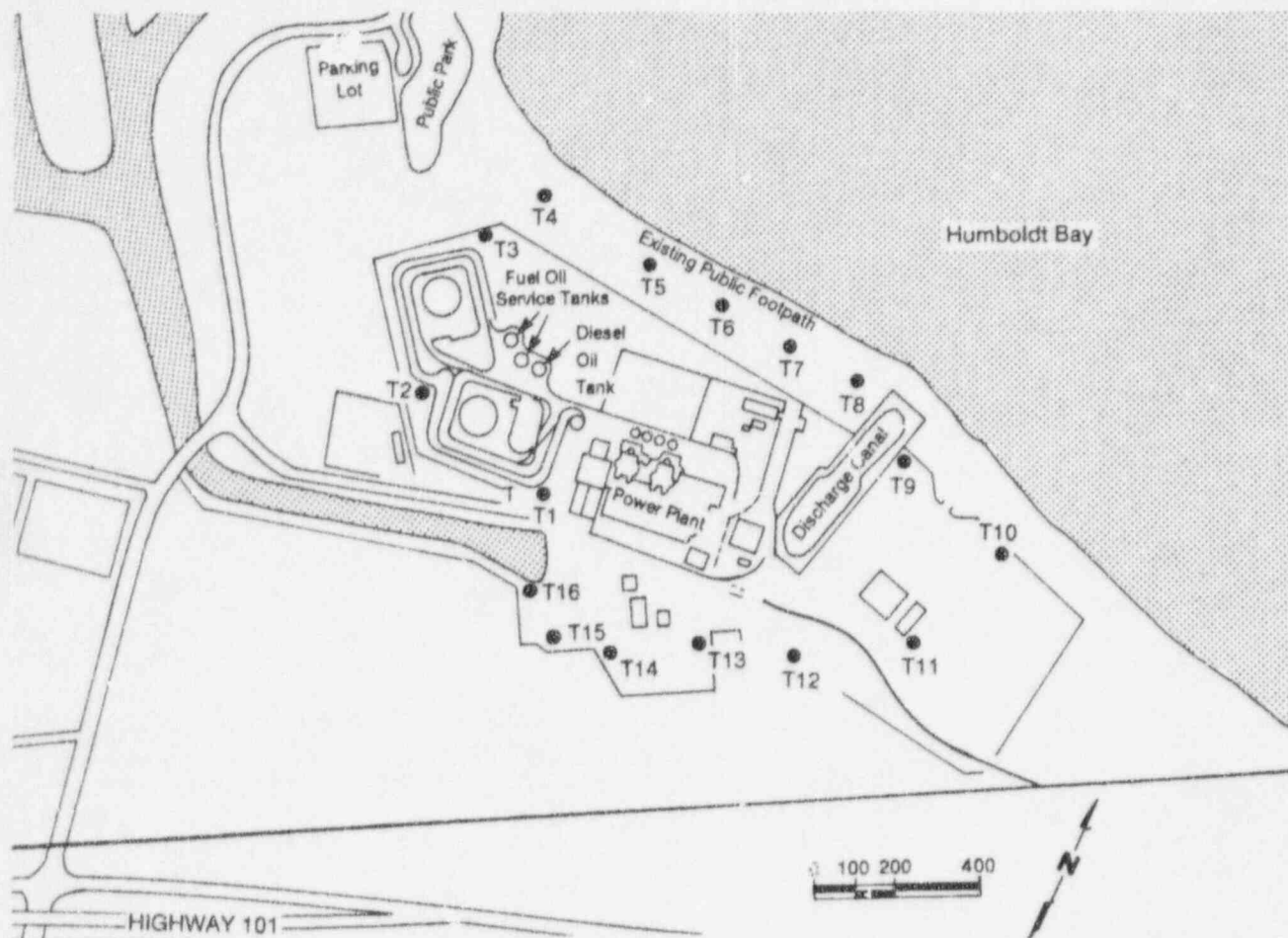


FIGURE B-2

HBPP ONSITE MONITORING WELL LOCATIONS

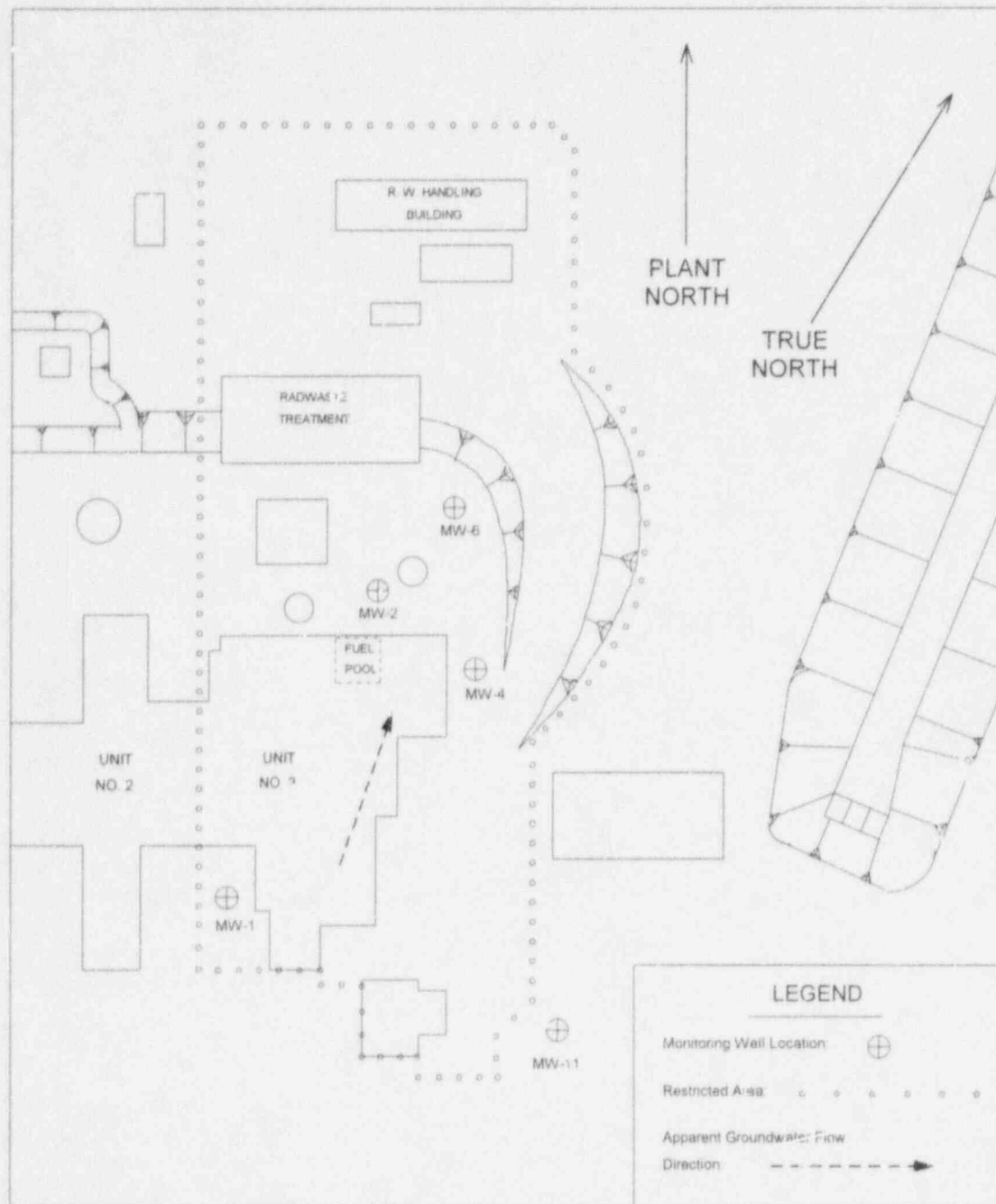
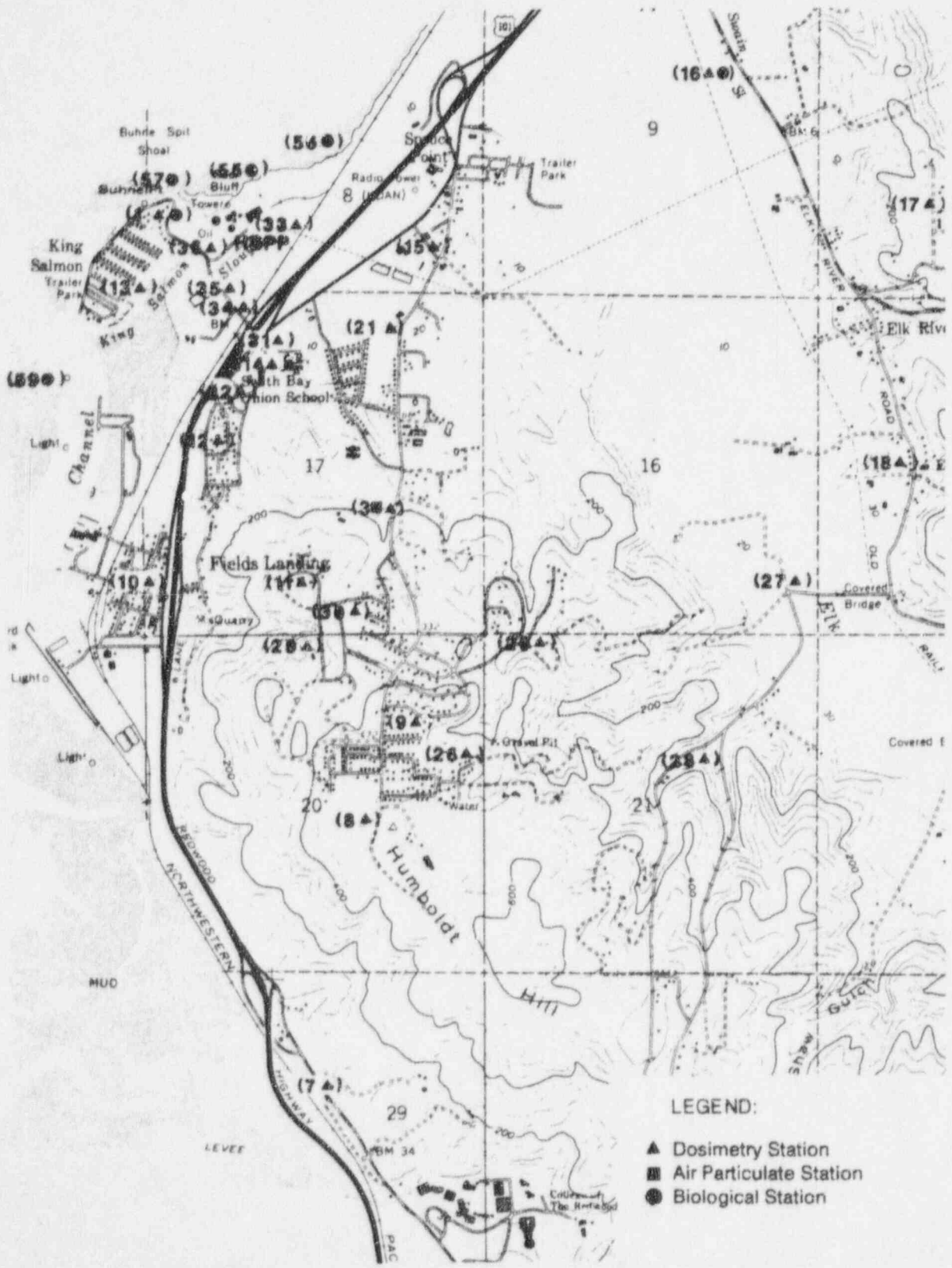


FIGURE B-3

HBPP OFFSITE TLD LOCATIONS



LEGEND:

- ▲ Dosimetry Station
- Air Particulate Station
- Biological Station

FIGURE B-3 (CONTINUED)
HBPP OFFSITE TLD LOCATIONS

Fortuna

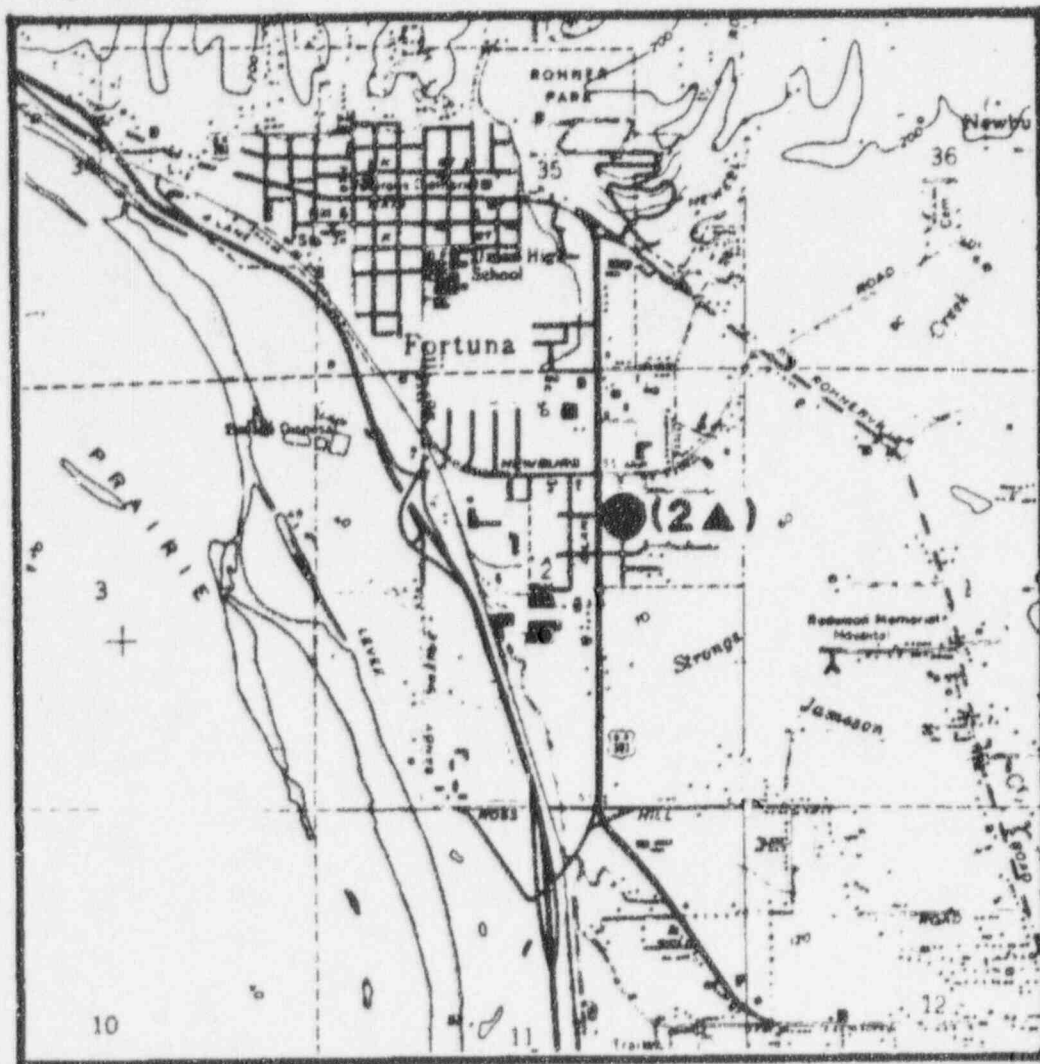


Figure B-4
Offsite Environmental Radiation Level Trends

